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1 Service Strategy for the Oxylog 1000

Table 1: Service Strategy

	Test documentation	Work to be performed
Inspection on-site	– Test certificate – Microfiche (laptop)	• Run through test certificate • Carry out minor repairs • Exchange consumables
STK on-site	– STK report	• Check unit for functional safety according to MedGV/MPG
Repair on-site	– Microfiche/CD	• Exchange mech. assemblies • Simple retrofitting
NL workshop, region	– Microfiche/CD	• Exchange mech. assemblies • Complex retrofitting
HL workshop	– Microfiche/CD – Manufacturing and checking specifications (FKV)	• Exchange and repair all mechanical assemblies • Settings and adjustments • Complex retrofitting
Customer, operating company, users	– Instructions for use – Checklist	• Run through checklist • Prepare unit

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1.1 Extension of Service/Repair Concept for Oxylog 1000

1.1.1 Operating block 2M86069 in Oxylog 1000

The operating block in the "Oxylog 1000, old" (serial numbers up to and excluding ARNN 0001) and the ventilator block of the new version of Oxylog 1000 (ARNN 0001 and higher) are not identical. They are not interchangeable.
Should the operating block be defective, proceed as follows:

– If the frequency control valve in the operating block is defective, replace the entire operating block. This replacement is very time-consuming and should be considered well. Of course, the Oxylog 1000 can also be returned to Lübeck for repair. But the operating block is available as spare item.

Defective/replaced operating blocks should be return to the repair workshop in Lübeck in any case.

– If the frequency control valve is not defective and the operating block has another type of fault, then the Oxylog 1000 must be returned to Lübeck for repair. The repair workshop will then repair the entire operating block instead of replacing it, as applicable.

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2 Opening the Oxylog 1000

- Switch off the Oxylog 1000 with the on/off switch.
- Detach the connector of the compressed gas hose from the socket on the central supply system or from the compressed gas cylinder as appropriate.
- Detach the ventilation hose from the Oxylog 1000.
- Unscrew the compressed gas hose from the Oxylog 1000.
- Remove the screws (1).
- Remove the grub screws (2).
- Withdraw the connection socket.

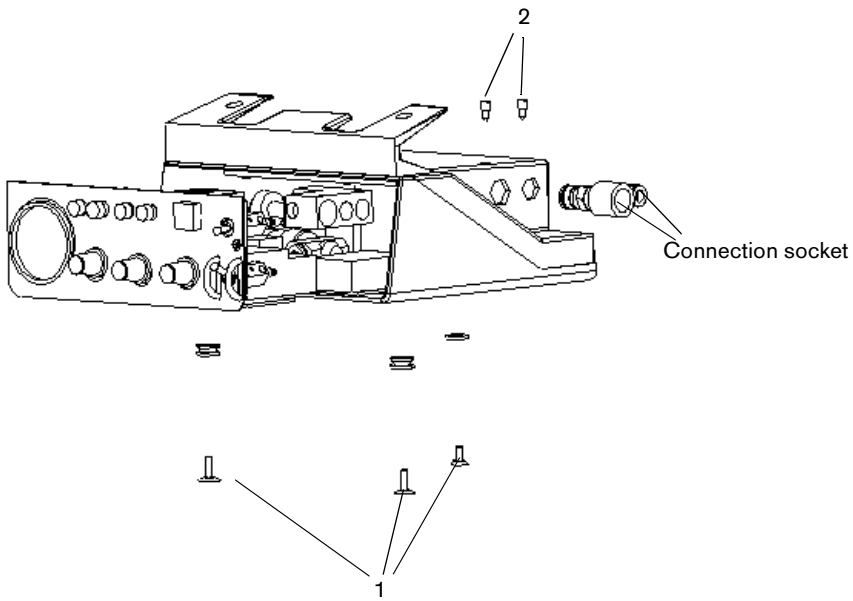

Fig. 1: View of the Oxylog 1000, opening the Oxylog 1000

- Withdraw the drawer unit from the housing of the Oxylog 1000.

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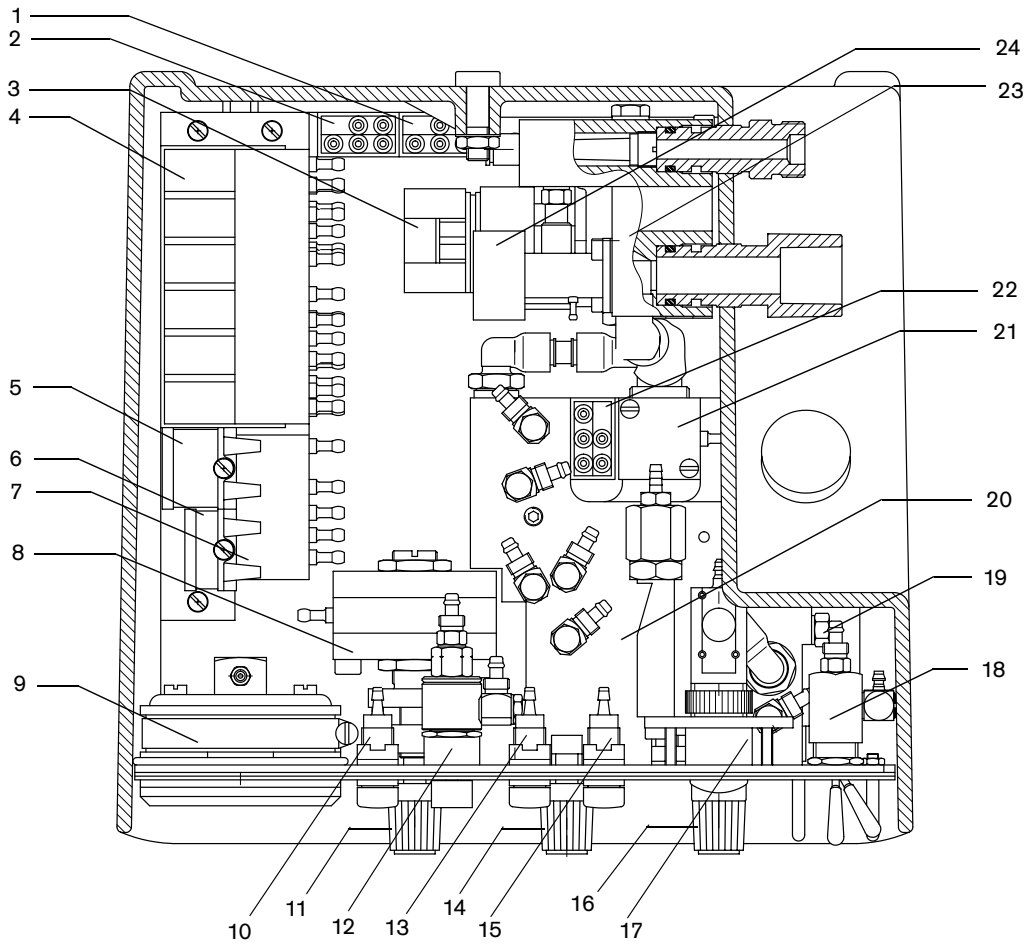

Fig. 2: Top view of the Oxylog 1000

Key

1	3/2-way valve (DMR 7)	**9**	Pressure gauge	**17**	Indicator (Pv)
2	3/2-way valve (DMR 8)	**10**	Indicator (Silence)	**18**	Air Mix/No Air Mix selector switch
3	Pressure regulator	**11**	Paw adjusting valve	**19**	On/off switch
4	Alarm logic (below: frequency control)	**12**	Push-button alarm valve (Silence)	**20**	Working block
5	Volume (exhalation)	**13**	Indicator (Paw low)	**21**	Vent valve
6	Volume (inhalation)	**14**	Frequency adjusting valve	**22**	3/2-way valve (DMR 18)
7	Alarm cut-off (Silence)	**15**	Indicator (Paw high)	**23**	Supply block
8	Double-membrane switch	**16**	Minute volume adjusting valve	**24**	Emergency air valve

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3 General repair instructions for the Oxylog 1000

The following assemblies of the Oxylog 1000 are replaced completely when repairs are made:

- On/off switch
- Air Mix/No Air Mix selector switch
- Pressure regulator
- Pressure gauge
- Double-membrane switch
- Alarm cut-off (Silence)
- Alarm logic
- Working block
- Supply block

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3.1 On/off switch

- When making repairs, replace the on/off switch completely.

3.1.1 Checking the on/off switch

- Connect the ventilation hose, breathing valve and hand-operated breathing bag to the Oxylog 1000.
- Screw the compressed gas hose for compressed gas supply onto the Oxylog 1000.
- Plug the connector of the compressed gas hose into the wall outlet/compressed gas cylinder.
- Set the on/off switch to “I”.

The Oxylog 1000 ventilates the hand-operated breathing bag with the pre-set patient parameters.

3.1.2 Removing/replacing the on/off switch

- Set the on/off switch of the Oxylog 1000 to “0”.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.

Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the silicone hose connections on the on/off switch.
- Detach the silicone hoses from the on/off switch .

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- Remove the screw (1) of the hose connection socket.
- Loosen the lock nut (2).
- Unscrew the on/off switch from the front panel towards the inside.
- Screw the lock nut onto the new ex-factory on/off switch.
- Fit the hose connection socket onto the new on/off switch.

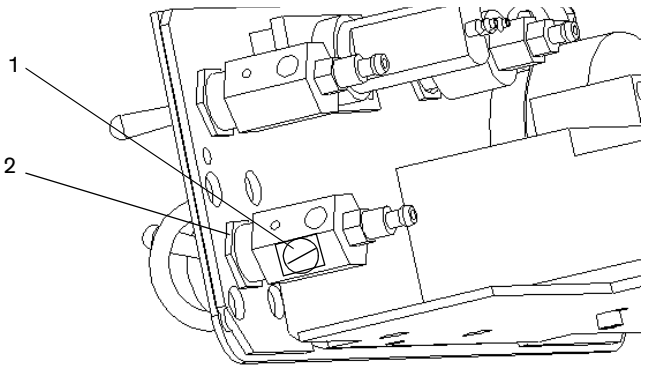

Fig. 3: View of the drawer unit of the Oxylog 1000, loosening the lock nut

- Screw the new on/off switch into the front panel from the inside.
  (Note: The on/off switch must be in the vertical position.)
- Secure the on/off switch with the lock nut (2 - see diagram above) in the front panel to prevent the on/off switch from rotating and falling out.
- Secure the hose connection socket by the screw (1).
  (Note: The sealing washers must be fitted with the screw!).
- Mount the hoses on the on/off switch with the aid of the markings.
- Install the drawer unit of the Oxylog 1000 in the housing.

- Dispose of the defective on/off switch in accordance with local waste disposal regulations.

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3.2 Air Mix/No Air Mix selector switch

- When making repairs, replace the Air Mix/No Air Mix selector switch completely.

3.2.1 Checking the Air Mix/No Air Mix selector switch

- Establish the following test set-up:

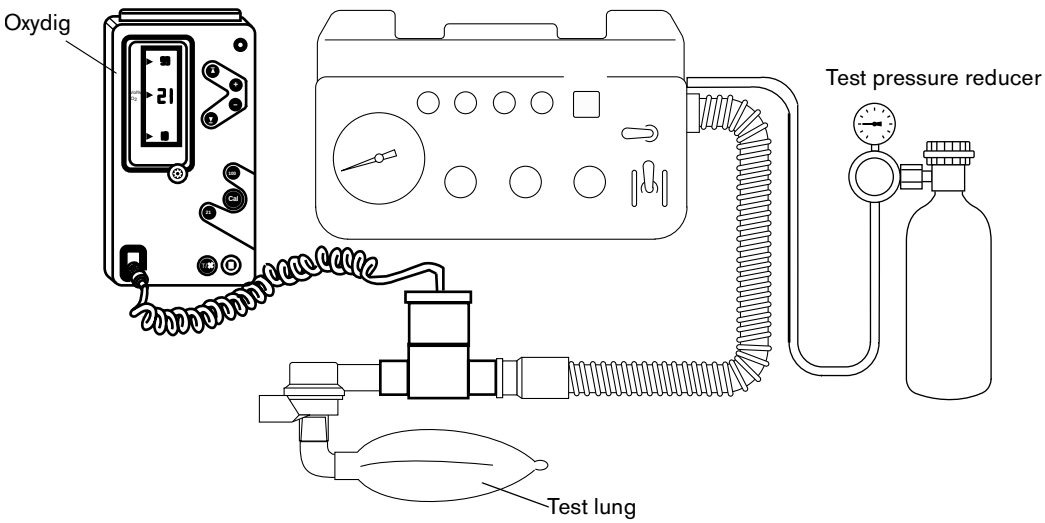

Fig. 4: Oxylog 1000 with test set-up to check the Air Mix/No Air Mix selector switch

- Set the Air Mix/No Air Mix to “Air Mix”.
- Switch on the Oxylog 1000.
- Measure the O_2 concentration, e.g. with the Oxydig.

The O_2 concentration shown on the display of the Oxydig is approx. 50 % O_2 by vol.

3.2.2 Removing/replacing the Air Mix/No Air Mix selector switch

- Set the on/off switch of the Oxylog 1000 to “0”.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.

Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the silicone hose connections on the Air Mix/No Air Mix selector switch.

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- Detach the silicone hoses from the Air Mix/No Air Mix selector switch.
- Remove the screw (1) of the hose connection socket.
- Loosen the lock nut (2).
- Unscrew the Air Mix/No Air Mix front panel from the front panel towards the inside.
- Screw the lock nut onto the new ex-factory Air Mix/No Air Mix selector switch.
- Fit the hose connection socket on the new Air Mix/No Air Mix selector switch.

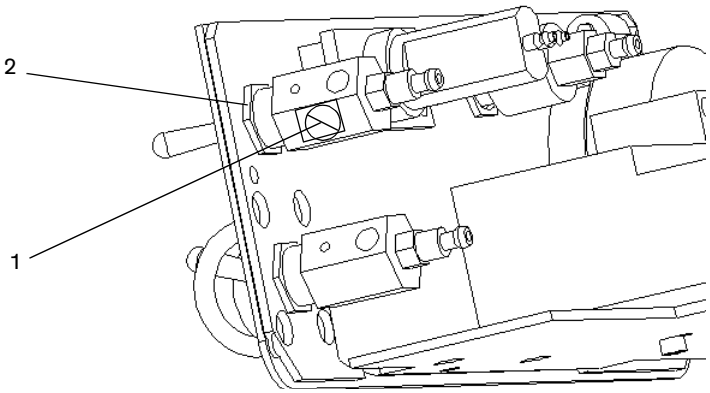

Fig. 5: View of the Oxylog, loosening the lock nut

- Screw the new Air Mix/No Air Mix selector switch into the front panel.
  (Note: The Air Mix/No Air Mix selector switch must be in a vertical position).
- Secure the Air Mix/No Air Mix selector switch with the lock nut (2 - see diagram above) in the front panel to prevent the Air Mix/No Air Mix selector switch from rotating and falling out.
- Secure the hose connection socket by the screw (1).
  (Note: The sealing washer must be fitted with the screw!).
- Mount the hoses on the Air Mix/No Air Mix selector switch with the aid of the markings.
- Install the drawer unit of the Oxylog 1000 in the housing.

- Dispose of the defective Air Mix/No Air Mix selector switch in accordance with local waste disposal regulations.

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3.3 Pressure regulator

- Replace the pressure regulator after six years.

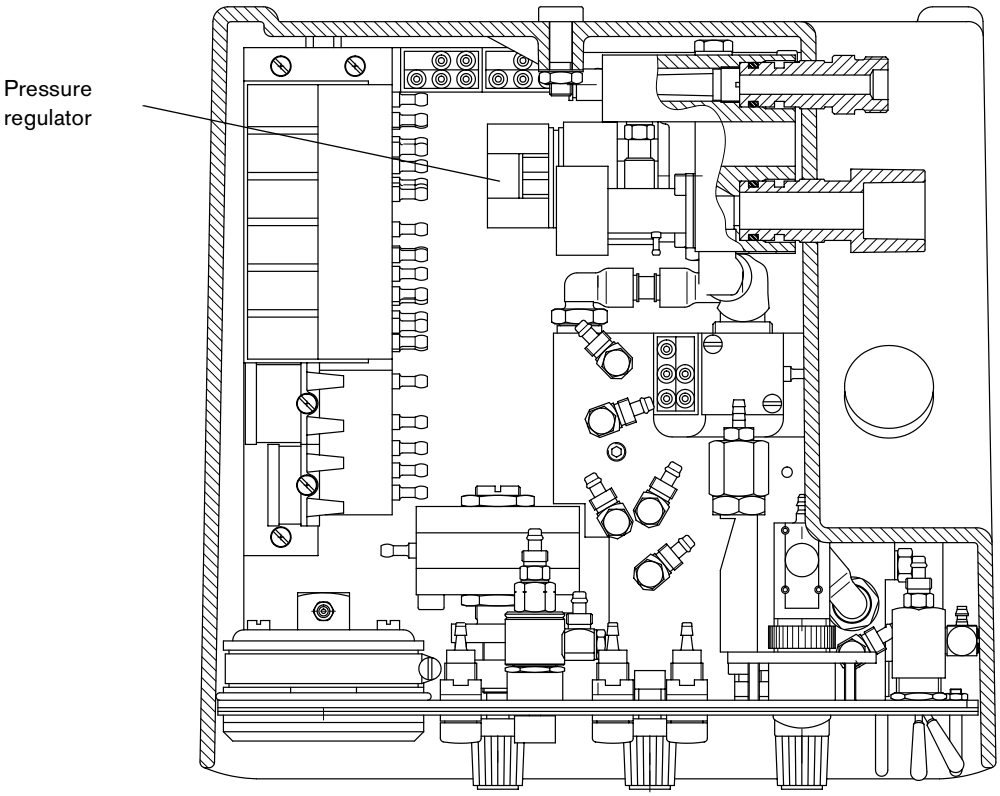

Fig. 6: Top view of the drawer unit of the Oxylog 1000

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3.3.1 Checking the pressure regulator

- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.
- Secure the connection socket for the ventilation hose by the grub screw on the drawer unit of the Oxylog 1000.
- Secure the connection socket for the compressed gas hose by the grub screw on the drawer unit of the Oxylog 1000.
- Detach the hose; see diagram below.
- Establish the following test set-up.

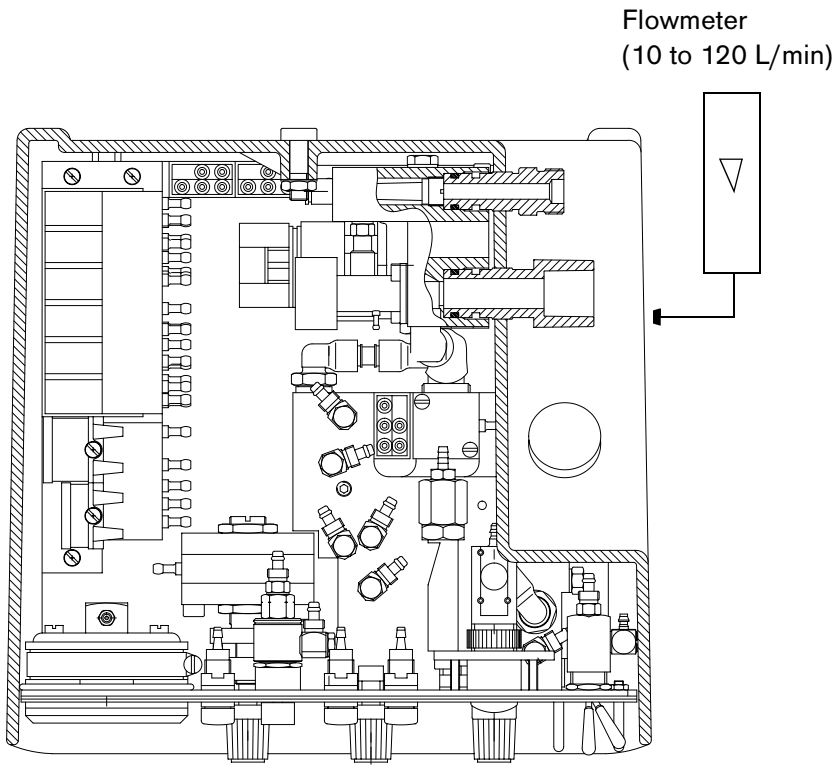

Fig. 7: Test set-up to check the pressure regulator

- Set the following parameters on the Oxylog 1000:
  Paw= 60 mbar
  Frequency = 10 1/min
  Air Mix/No Air Mix selector switch = No Air Mix position
  Set minute volume (MV) at full right.
- Screw the compressed gas hose for compressed gas supply onto the connection socket of the Oxylog 1000.

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- Plug the connector of the compressed gas hose into the wall outlet/compressed gas cylinder.
- Set the on/off switch to “I”.

At a flow rate of approx. 55 L/min (indicated on the flowmeter) the separate pressure gauge indicates a pressure of 1.5 bar.

If the measured pressure is not 1.5 bar, adjust the pressure regulator as follows:

- Release the adjusting ring of the pressure reducer by pulling out the adjusting ring.
- Turn the adjusting ring clockwise to increase the downstream pressure of the pressure regulator or turn the adjusting ring counter-clockwise to reduce the pressure.
- After setting the correct downstream pressure, press the adjusting ring of the pressure regulator down to prevent the downstream pressure being unintentionally altered.

3.3.2 Removing/replacing the pressure regulator

- Set the on/off switch of the Oxylog 1000 to “0”.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.
- Remove the screws (1).

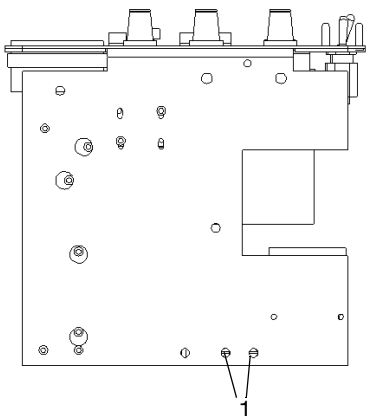

Fig. 8: Bottom view of the drawer unit, removing the screws

- Detach the small silicone hose (hose connection: supply block to pressure gauge) from the hose connection socket of the supply block.
- Detach the large silicone hose (hose connection: supply block to working block) from the hose connection socket of the supply block.

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- Press in the retaining ring of the hose connection socket (hose connection socket fitted on working block) and at the same time withdraw the PA tube (hose connection: supply block to working block).
- Unscrew the screw (1); see diagram below.
- Fit the hose connection socket with the PA tube of the old pressure regulator on the new ex-factory pressure regulator.

- Dispose of the old pressure regulator in accordance with local waste disposal regulations.

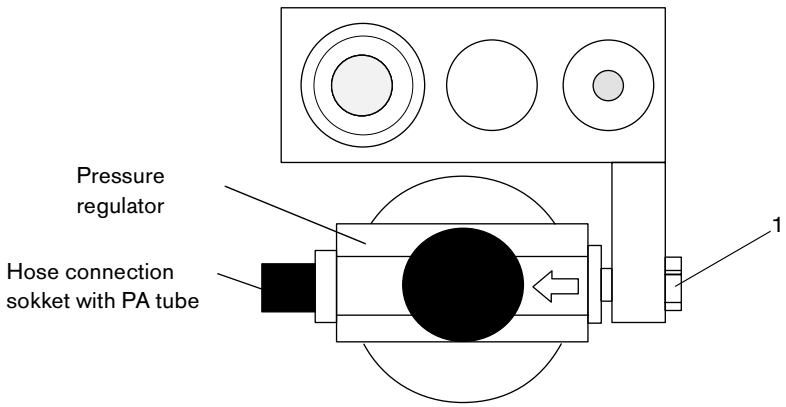

Fig. 9: View of the supply block, removing the screw

- Mount the new pressure regulator on the supply block by the screw (1). (Make sure the sealing washers between the pressure regulator and the supply block and between the screw head and the supply block are fitted!)
- Press the PA tube (pressure regulator outlet) into the hose connection socket of the working block.
- Check that the PA tube is seated firmly in the hose connection socket of the working block by carefully pulling on the PA tube.
- Plug the large silicone hose (hose connection: supply block to working block) onto the hose connection socket of the supply block.
- Plug the small silicone hose (hose connection: supply block to pressure gauge) onto the hose connection socket of the supply block.
- Mount the supply block on the drawer unit of the Oxylog 1000 (Note: Also fit the distance rollers between the floor panel and the supply block).

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- Secure the connection socket for the ventilation hose by the grub screw on the drawer unit of the Oxylog 1000.
- Secure the connection socket for the compressed gas hose by the grub screw on the drawer unit of the Oxylog 1000.
- Detach the hose; see diagram below.
- Establish the following test set-up.

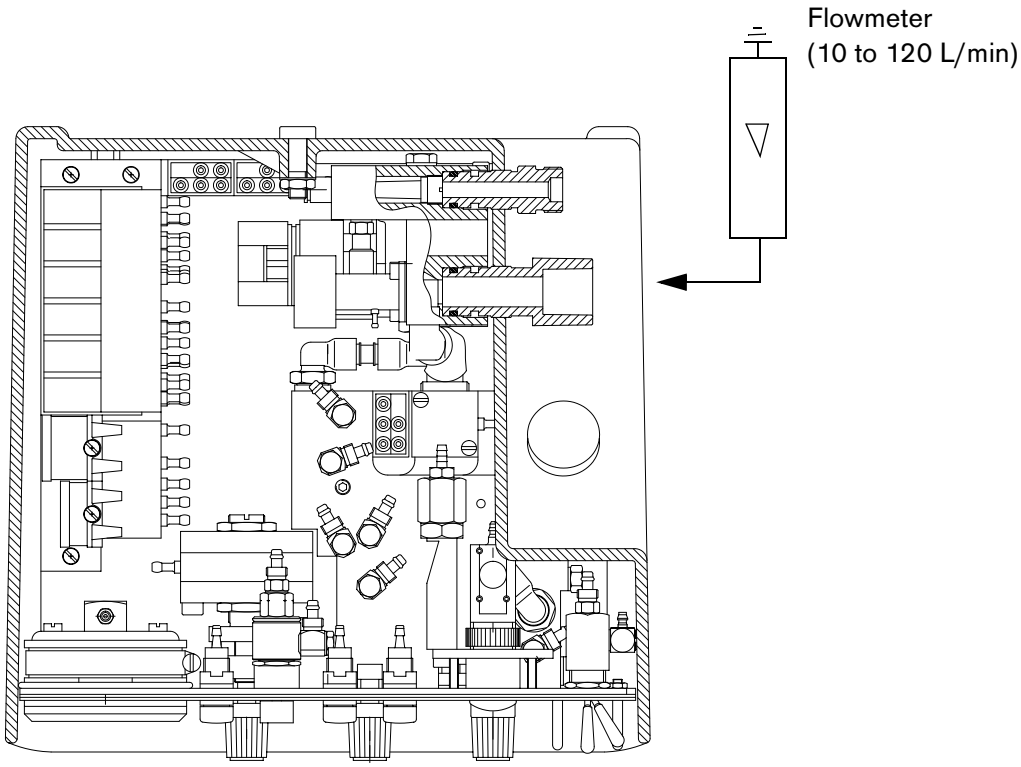

Fig. 10: Test set-up to check the pressure regulator

- Set the following parameters on the Oxylog 1000:
  Paw= 60 mbar
  Frequency = 10 1/min
  MV= 30 L/min
  Air Mix/No Air Mix selector switch = No Air Mix position
- Screw the compressed gas hose for compressed gas supply onto the connection socket of the Oxylog 1000.
- Plug the connector of the compressed gas hose into the wall outlet/compressed gas cylinder.
- Set the on/off switch to “I”.

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- Set a flow rate of approx. 55 L/min with the flowmeter (10 to 120 L/min).

The separate pressure gauge indicates a pressure of 1.5 bar.

If the measured pressure is not 1.5 bar, adjust the pressure regulator as follows:

- Release the adjusting ring of the pressure reducer by pulling out the adjusting ring.
- Turn the adjusting ring clockwise to increase the downstream pressure of the pressure regulator or turn the adjusting ring counter-clockwise to reduce the pressure.
- After setting the correct downstream pressure, press the adjusting ring of the pressure regulator down to prevent the downstream pressure being unintentionally altered.
- Check that there is no leakage in the hose system of the Oxylog 1000.
- Install the drawer unit in the reverse sequence into the housing of the Oxylog 1000.

3.3.3 Checking the “Pv” indicator

- Connect the ventilation hose, breathing valve and hand-operated breathing bag to the Oxylog 1000.
- Screw the compressed gas hose onto the Oxylog 1000.
- Plug the connector of the compressed gas hose onto the O_2 compressed gas cylinder.
- Set the on/off switch of the Oxylog 1000 to “I”.
- Set the following parameters on the Oxylog 1000:
  Paw = 60 mbar
  Frequency = 10 1/min
  MV = 10 L/min
  Air Mix/No Air Mix selector switch = No Air Mix position
- Slowly close the valve on the O_2 compressed gas cylinder.

The compressed gas supply (Pv) indicator shows “red” if the supply pressure is between 2.3 and 1.8 bar.

- Slowly open the valve on the O_2 compressed gas cylinder.

The compressed gas supply (Pv) indicator shows “green” if the supply pressure is between 2.1 and 2.6 bar.

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3.4 Pressure gauge

- When making repairs, replace the pressure gauge completely.

3.4.1 Checking the pressure gauge

- Connect the compressed gas supply to the Oxylog 1000.
- Connect a separate test gauge between the ventilation hose and the breathing valve (measuring range: –30 mbar to +120 mbar).
- Set the parameters on the Oxylog 1000 and switch on the Oxylog 1000.
- Observe the built-in and separate pressure gauges.

Both pressure gauges show the same airway pressure.

- If only the separate test gauge shows a correct airway pressure, replace the pressure gauge of the Oxylog 1000.

3.4.2 Removing/replacing the pressure gauge

- Set the on/off switch of the Oxylog 1000 to “0”.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.
- Detach the silicone hose from the pressure gauge connection.
- Loosen the screw (1) of the screw clamp and push the screw clamp over the pressure gauge into the interior of the Oxylog 1000.
- Press the pressure gauge outwards through the front panel.

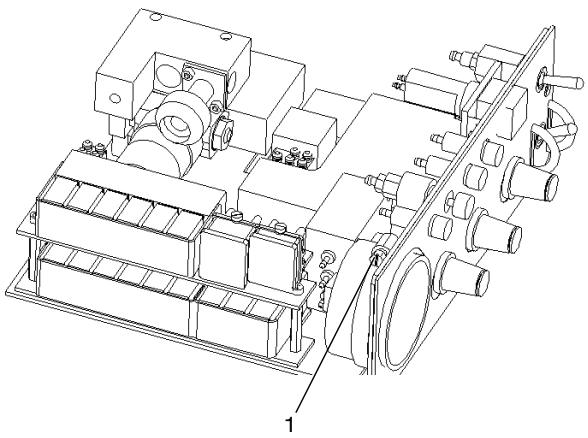

Fig. 11: View of the removed drawer unit, loosening the screw clamp

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- Moisten the rubber seal and push the new ex-factory pressure gauge from the front into the front panel **(Note: Make sure the pressure gauge is centered in the front panel!).**
- Secure the pressure gauge by the screw clamp to prevent it from falling out.
- Plug the detached silicone hose onto the pressure gauge hose connection socket.
- Install the drawer unit in the reverse sequence into the housing of the Oxylog 1000.
- Connect a separate test gauge between the ventilation hose and the breathing valve (measuring range: –30 mbar to +120 mbar).
- Set the patient parameters.
- Observe the built-in and separate test gauges.

Both pressure gauges show the same airway pressure.

- Dispose of the defective pressure gauge of the Oxylog 1000 in accordance with local waste disposal regulations.

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3.5 Double-membrane switch

Critical setting. The setting of the double-membrane switch is highly critical. The double-membrane switch must not be adjusted outside the factory. The double-membrane switch is pre-set at the factory.

- When making repairs, replace the double-membrane switch completely.

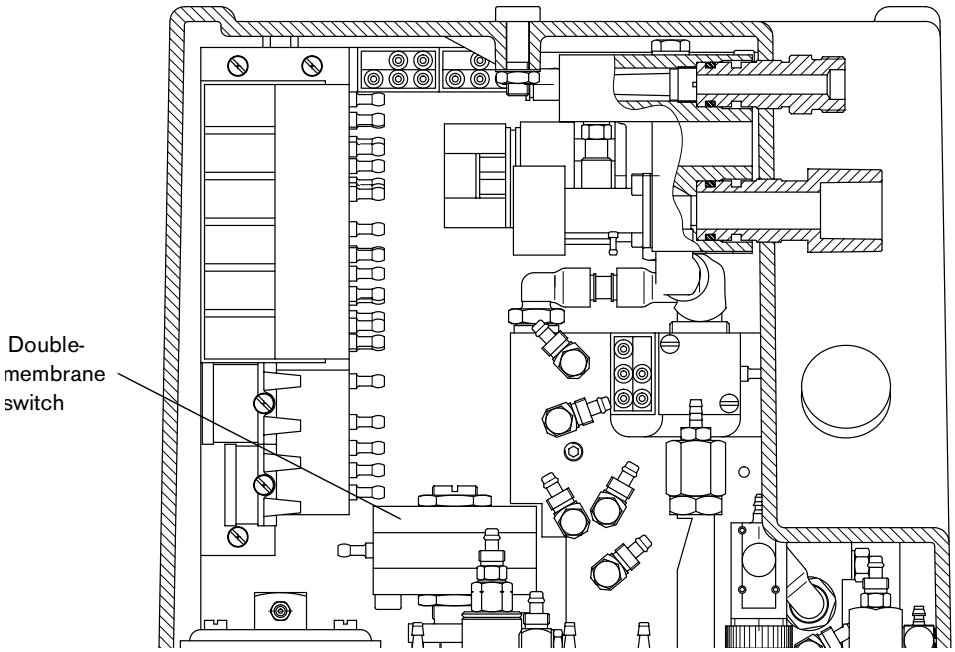

Fig. 12: View of the open Oxylog 1000

3.5.1 Checking the double-membrane switch

- Connect the ventilation hose, breathing valve and hand-operated breathing bag to the Oxylog 1000.
- Screw the compressed gas hose onto the Oxylog 1000.
- Plug the connector of the compressed gas hose onto the O_2 compressed gas cylinder.
- Set the on/off switch of the Oxylog 1000 to “I”.
- Set the following parameters on the Oxylog 1000:
  Paw = Set to full right
  Frequency = 10 1/min
  Air Mix/No Air Mix selector switch = No Air Mix position
- Set the minute volume “MV” so that a ventilation pressure of approx. 30 mbar is reached.

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- During the inhalation phase, reduce the value of the minute volume on the minute volume adjusting valve in steps.

When the ventilation pressure of approx. 10 mbar is reached, the visual “Paw low” alarm and the acoustic alarm are triggered (read off ventilation pressure from pressure gauge of Oxylog 1000).

- Press the alarm cut-off (Silence) button.

After a maximum of 2 minutes the acoustic alarm sounds again.

- Set the Paw adjuster knob full to the left.
- Set the minute volume “MV” so that a ventilation pressure of approx. 15 mbar is reached.
- During the inhalation phase, increase the value of the minute volume on the minute volume adjusting valve in steps.

When the ventilation pressure of approx. 20 mbar is reached, the visual “Paw high” alarm and the acoustic alarm are triggered (read off ventilation pressure from pressure gauge of Oxylog 1000). The inhalation phase is immediately aborted.

3.5.2 Removing/replacing the double-membrane switch

- Set the on/off switch of the Oxylog 1000 to “0”.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.
- Pull off the cap (1) of the Paw control knob.
- Loosen the nut on the control knob.
- Push the control knob off of the axle of the ventilation pressure adjusting valve “Paw”.

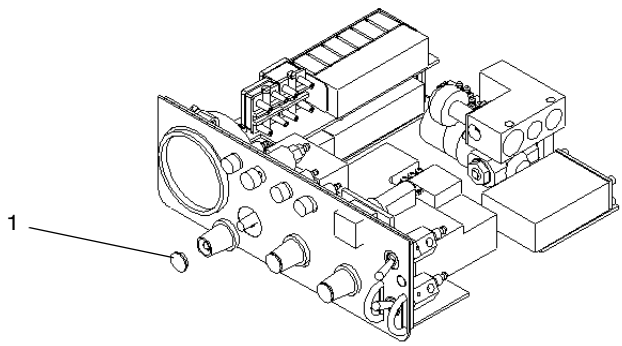

Fig. 13: View of the Oxylog 1000, pushing the control knob off of the axle

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Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the silicone hose connections plugged into the hose connection sockets of the double-membrane switch.
- Detach the silicone hoses from the hose connection sockets of the defective double-membrane switch.

Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the silicone hose connections plugged into the hose connection sockets of the “Silence” push-button valve.
- Detach the silicone hoses connected to the hose connection sockets of the push-button valve.
- Unscrew the hose connection socket fitted on the long side of the push-button valve.
- Loosen the lock nut of the push-button valve.
- Unscrew the push-button valve from the front panel of the Oxylog 1000 towards the inside.
- Remove the fixing screws (1) of the defective double-membrane switch.

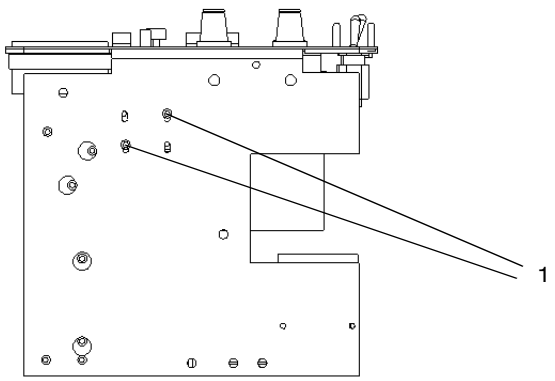

Fig. 14: Bottom view of the drawer unit of the Oxylog 1000, removing the screws

- Take the defective double-membrane switch out of the drawer unit of the Oxylog 1000.

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- Dispose of the defective double-membrane switch in accordance with local waste disposal regulations.

- Fit the new ex-factory double-membrane switch by the fixing screws (1) into the drawer unit of the Oxylog 1000.
- Screw the push-button valve into the front panel of the Oxylog 1000 from the inside.
- Secure the lock nut of the push-button valve.
- Mount the hose connection socket on the push-button valve.
- Connect the silicone hoses according to the markings on the hose connection sockets of the push-button valve.
- Connect the silicone hoses according to the markings on the hose connection sockets of the double-membrane switch.
- Assemble the Oxylog 1000 in the reverse sequence.
- Carry out a function test with the “Oxylog 1000” test certificate.

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3.6 Alarm cut-off (Silence)

The alarm cut-off assembly includes 3/2-way valves, volume, push-button valve and alarm generator.

- When making repairs, replace the 3/2-way valves, the volume, the push-button valve or the alarm generator completely.

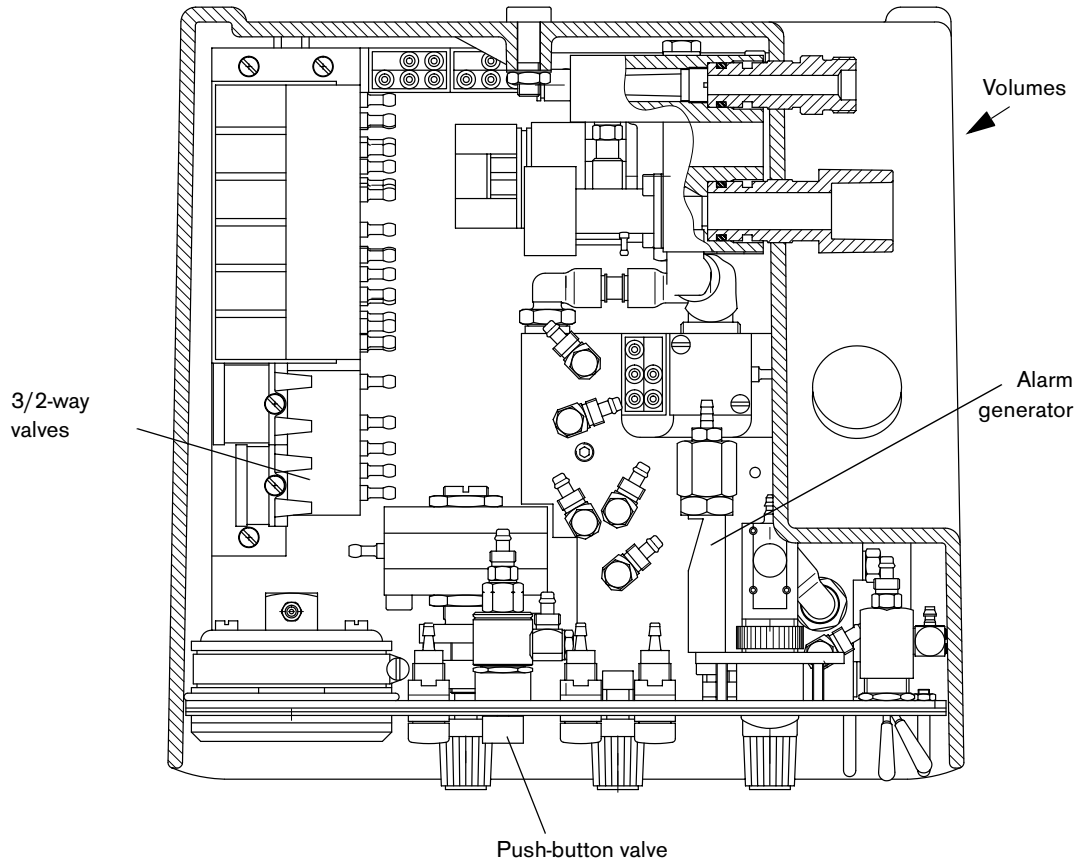

Fig. 15: Extract from the layout diagram of the assemblies of the Oxylog 1000

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3.6.1 Checking the alarm cut-off

- Connect the ventilation hose, breathing valve and hand-operated breathing bag to the Oxylog 1000.
- Screw the compressed gas hose onto the Oxylog 1000.
- Plug the connector of the compressed gas hose onto the O_2 compressed gas cylinder.
- Open the valve on the O_2 compressed gas cylinder.
- Set the on/off switch of the Oxylog 1000 to “I”.
- Set the following parameters on the Oxylog 1000:
  Paw = Set to full right
  Frequency = 10 1/min
  Air Mix/No Air Mix selector switch = No Air Mix position
  Set minute volume “MV” so that a ventilation pressure of approx. 30 mbar is reached.
- During the inhalation phase, reduce the value of the minute volume on the minute volume adjusting valve in steps.

When the ventilation pressure of approx. 10 mbar is reached, the visual “Paw low” alarm and the acoustic alarm are triggered (read off ventilation pressure from pressure gauge of Oxylog 1000).

- Press the alarm cut-off (Silence) button.

After a maximum of 2 minutes the acoustic alarm sounds again.

- If the alarm tone is not cut off, check the volume for the alarm cut-off, the push-button valve or the hoses for leakage and replace the volume, the push-button valve or the silicone hoses as necessary.

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3.6.2 Removing/replacing the push-button valve

- Set the on/off switch of the Oxylog 1000 to “0”.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000”.

Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the silicone hose connections plugged into the hose connection sockets of the push-button valve.
- Detach the silicone hoses connected to the hose connection sockets of the push-button valve.
- Unscrew the hose connection socket (1) fitted on the long side of the push-button valve.
- Loosen the lock nut (2) of the push-button valve.
- Unscrew the push-button valve from the front panel of the Oxylog 1000 towards the inside.
- Screw the lock nut (2) onto the new push-button valve.
- Mount the hose connection sockets of the defective push-button valve on the new ex-factory push-button valve.

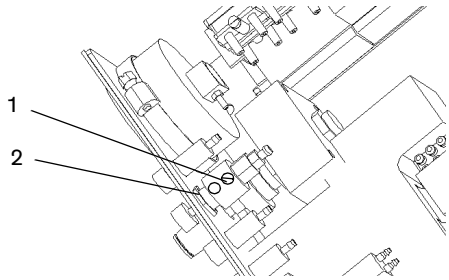

Fig. 16: View of the Oxylog, loosening the lock nut

- Screw the new push-button valve into the front panel from the inside so that the thread of the push-button valve abuts flush with the front panel.
- Mount the hose connection socket (1) on the push-button valve **(Note: Make sure the sealing washers are fitted with the screw!)**.
- Secure the push-button valve on the front panel by the lock nut (2).
- Mount the silicone hoses on the push-button valve with the aid of the markings.
- Assemble the Oxylog 1000 in the reverse sequence.

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- Dispose of the defective push-button valve in accordance with local waste disposal regulations.

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3.7 Alarm logic

The alarm logic comprises 3/2-way valves and the “Paw low” and “Paw high” indicators.

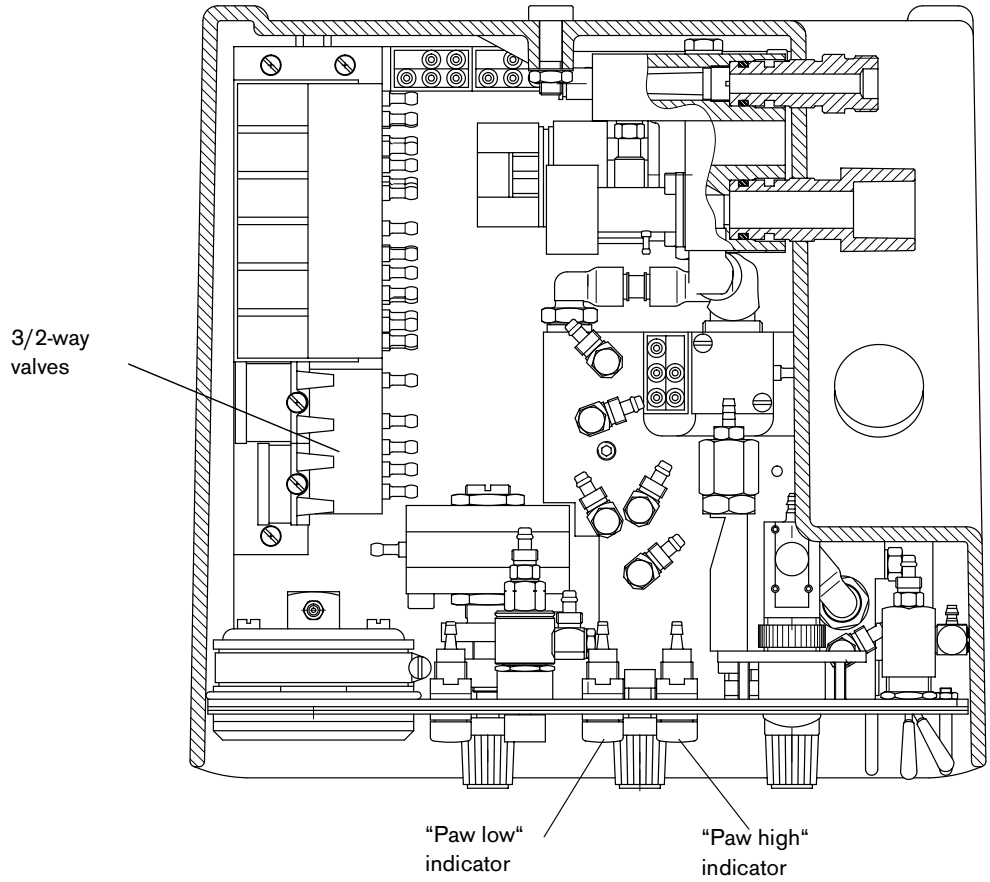

Fig. 17: View of the open Oxylog 1000

3.7.1 Checking the alarm logic and Paw high/Paw low indicators

- Connect the ventilation hose, breathing valve and hand-operated breathing bag to the Oxylog 1000.
- Screw the compressed gas hose onto the Oxylog 1000.
- Plug the connector of the compressed gas hose onto the O_2 compressed gas cylinder.
- Open the valve on the O_2 compressed gas cylinder.
- Set the on/off switch of the Oxylog 1000 to “I”.

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- Set the following parameters on the Oxylog 1000:
  Paw = 60 mbar
  Frequency = 10 1/min
  MV = 10 L/min
  Air Mix/No Air Mix selector switch = No Air Mix position
- During the inhalation phase, forcefully press the hand-operated breathing bag together so that the airway pressure is approx. 60 mbar (read off airway pressure from pressure gauge).

The “Paw high” indicator lights up and the alarm tone is triggered.

- If the “Paw high” indicator does not light up, check the “Paw high” indicator, the silicone hoses or the 3/2-way valves of the alarm logic and replace them as necessary.
- Detach the hand-operated breathing bag.

The “Paw low” indicator lights up and the alarm tone is triggered.

- If the “Paw low” indicator does not light up, check the “Paw low” indicator, the silicone hoses or the 3/2-way valves of the alarm logic and replace them as necessary.

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3.8 Working block

The working block component assembly comprises the minute volume adjusting valve, the frequency adjusting valve, the safety valve, the injector and the vent valve.

Critical setting. The setting of the working block is highly critical. Adjust the working block only as specified in the instructions, and only as and when required. The working block is pre-set at the factory.

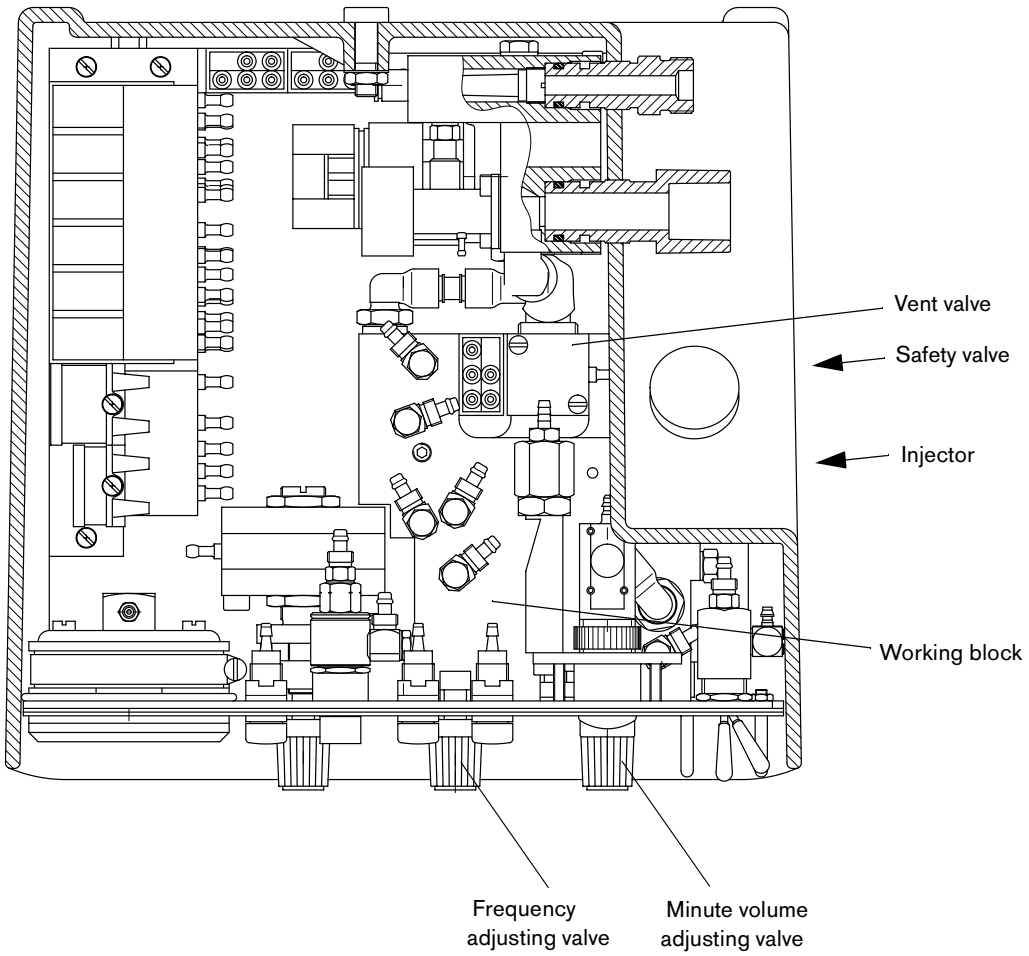

Fig. 18: View of the open Oxylog 1000

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3.8.1 Frequency control

The frequency control assembly comprises six 3/2-way valves, the “inhalation” volume, the “exhalation” volume, two dosing valves and the working block.

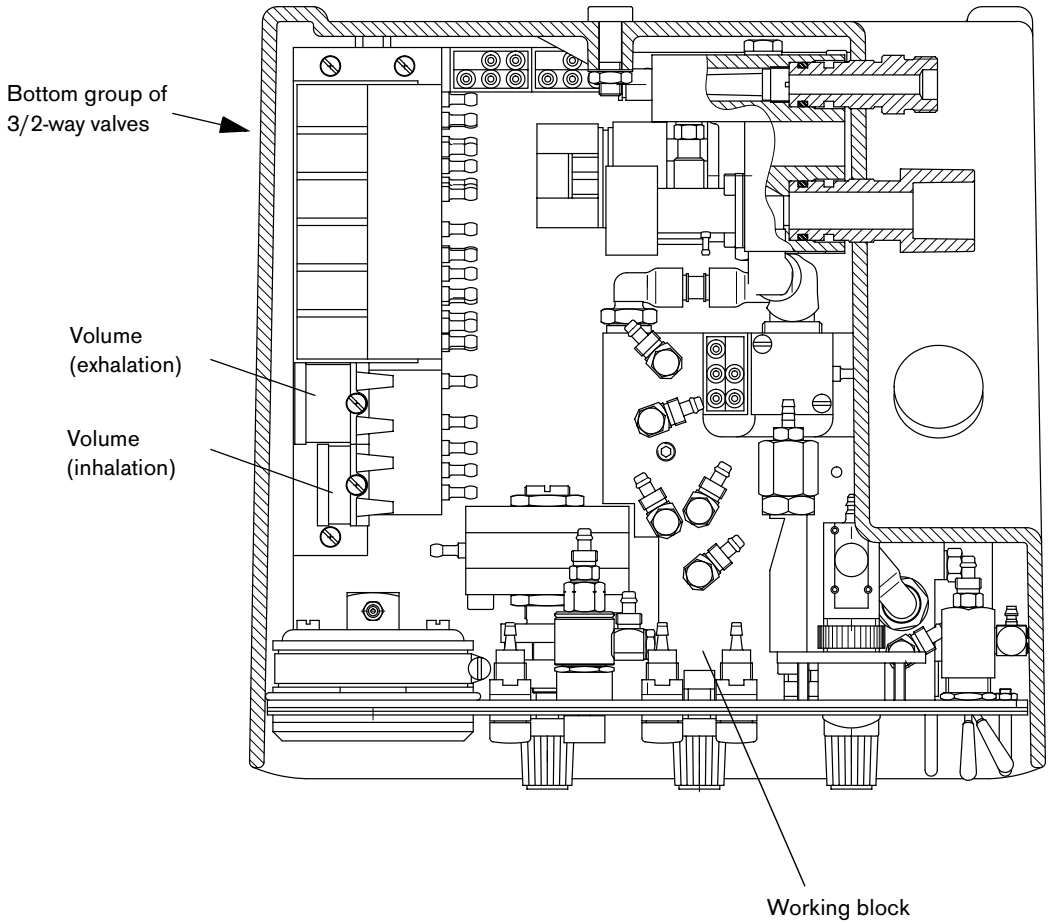

Fig. 19: View of the open Oxylog 1000

Checking the frequency control

- Connect the ventilation hose, breathing valve and hand-operated breathing bag to the Oxylog 1000.
- Screw the compressed gas hose onto the Oxylog 1000.
- Plug the connector of the compressed gas hose onto the O_2 compressed gas cylinder.
- Open the valve on the O_2 compressed gas cylinder.
- Set the on/off switch of the Oxylog 1000 to “I”.

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- Set the following parameters on the Oxylog 1000:
  Paw = 60 mbar
  Frequency = 10 1/min
  MV = 10 L/min
  Air Mix/No Air Mix selector switch = No Air Mix position
- Use a stopwatch to determine the I:E ratio.

The I:E ratio is 0.66 (0.71 to 0.58).

- If the I:E ratio is not reached, check the inhalation volume, the exhalation volume and the corresponding silicone hoses for leakage and replace them as necessary.
- After replacing a volume or a silicone hose, check the I:E ratio again.

If the frequency is not approx. 10 1/min, check the following assemblies and replace them as necessary:

– 3/2-way valves
– “Inhalation” volume (leakage test)
– “Exhalation” volume (leakage test)
– Dosing valves (check for any blockages)
– Silicone hoses (leakage test)

Frequency deviation. If the frequency set on the Oxylog 1000 is incorrect, adjust the working block as specified in the instructions or replace it with a factory-new working block.

Replacement of working block: see section “Removing/replacing the working block”.

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Adjusting the frequency control valves

If the frequency setting of the Oxylog 1000 is outside the specified tolerance (refer to test certificate item “4.6 Frequency”) the frequency can be adjusted using the frequency control valve as described below.

- Remove the drawer unit of the Oxylog 1000 (see “Opening the Oxylog 1000”).
- Remove the cap from the “Freq” rotary knob.
- Connect up the Oxylog 1000 as specified under “ Checking the frequency control”.
- Loosen hexagon socket screw **A**.

The hexagon socket screw secures the stem of the frequency control valve.

In the following diagram the working block is removed for the sake of clarity. It **does not** need to be removed to adjust the frequency control valve.

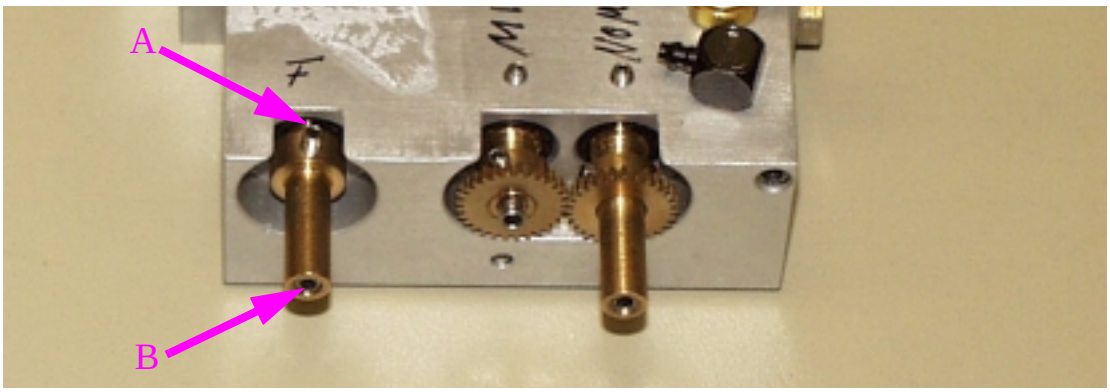

Fig. 20: Working block, Adjusting the frequency

- Set the frequency to 20 l/min.
- Switch on the Oxylog 1000.
- Unscrew adjuster screw **B** (Fig. 20:) clockwise until the measured frequency is approx. 30 l/min.

If the frequency does not change, the cone of the frequency control valve may be stuck. Loosen it as necessary by tapping lightly on the working block with a hammer handle or a similar implement. If the cone cannot be freed, the working block must be replaced (see “3.8.4 Removing/replacing the working block”).

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- Carefully screw in adjuster screw B (Fig. 20:) counter-clockwise until the measured frequency is approx. 20 l/min.
- Check the frequency as per test certificate item “4.6 Frequency”, and repeat the adjustment if the tolerances are still exceeded.
- Tighten hexagon socket screw A (Fig. 20:).
- Deliver the unit to the operators ready for operation.

3.8.2 Checking the minute volume setting

- Screw the compressed gas hose for compressed gas supply onto the connection socket of the Oxylog 1000.
- Plug the connector of the compressed gas hose into the wall outlet/compressed gas cylinder.
- Establish the following test set-up:

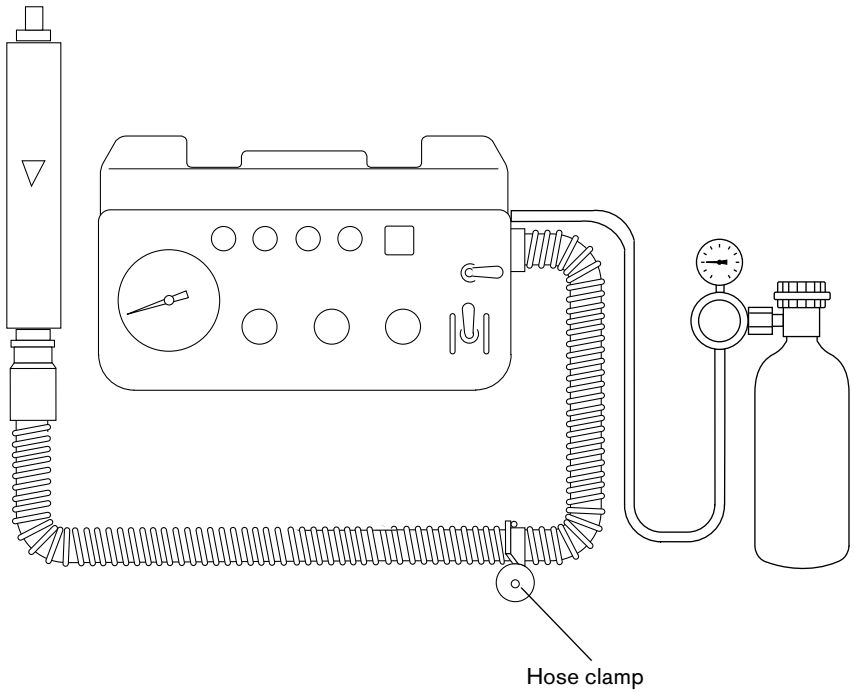

Fig. 21: Test set-up of the Oxylog 1000, minute volume setting

- Set the following parameters on the Oxylog 1000:
  Paw= Set to full right
  Frequency = 10 1/min
  MV= 3 L/min
  Air Mix/No Air Mix selector switch = No Air Mix position

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- Connect the separate flowmeter (measuring range 2 to 10 L/min) to the ventilation outlet of the Oxylog 1000.
- Set the on/off switch to “I”.
- With the hose clamp, generate a compensation pressure of approx. 0 to 3 mbar (read off pressure from pressure gauge of Oxylog 1000).

The separate flowmeter shows a flow rate of approx. 7.5 L/min.

- Connect the separate flowmeter (measuring range 10 to 120 L/min) to the ventilation outlet of the Oxylog 1000.
- Set the minute volume “MV” to 20 L/min.
- With the hose clamp, generate a compensation pressure of 18 to 22 mbar (read off pressure from pressure gauge of Oxylog 1000).

The separate flowmeter shows a flow rate of approx. 50 L/min.

3.8.3 Adjusting the minute volume control valves

The minute volume is adjusted by two control valves. Depending on the setting of the AIR Mix/No AIR Mix selector switch, either two or one control valve(s) are/is active (see also Fig. 1: Flow chart of the Oxylog 1000 (old)” in Diagrams and Overviews). It is essential to maintain the sequence specified here for “Adjusting the minute volume control valves”. For the precise settings see “Adjusting the minute volume control valves at “AIR Mix” setting” and “Adjusting the minute volume control valves at “No AIR Mix” setting”.

To adjust the minute volume control valves the front panel must be removed (see “3.8.4 Removing/replacing the working block”; Fig. 24: View of the removed drawer unit, loosening the screw clamp; and Fig. 25: View of the open Oxylog 1000, removing the nut”). After removal the second control valve is also visible.

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Adjusting the minute volume control valves at “AIR Mix” setting

If the frequency setting of the Oxylog 1000 is outside the specified tolerance (refer to test certificate item “4.7 Minute volume (limit stop)”) the minute volume can be adjusted as described below.

- Remove the drawer unit of the Oxylog 1000 (see “Opening the Oxylog 1000”).
- Remove the front panel (see also “3.8.4 Removing/replacing the working block”).
- Connect up the Oxylog 1000 as specified under “3.8.2 Checking the minute volume setting”.
- Loosen hexagon socket screw A (Fig. 22:).

The hexagon socket screw secures the stem of the minute volume control valve.

In the following diagram the working block is removed for the sake of clarity. It **does not** need to be removed to adjust the minute volume control valves.

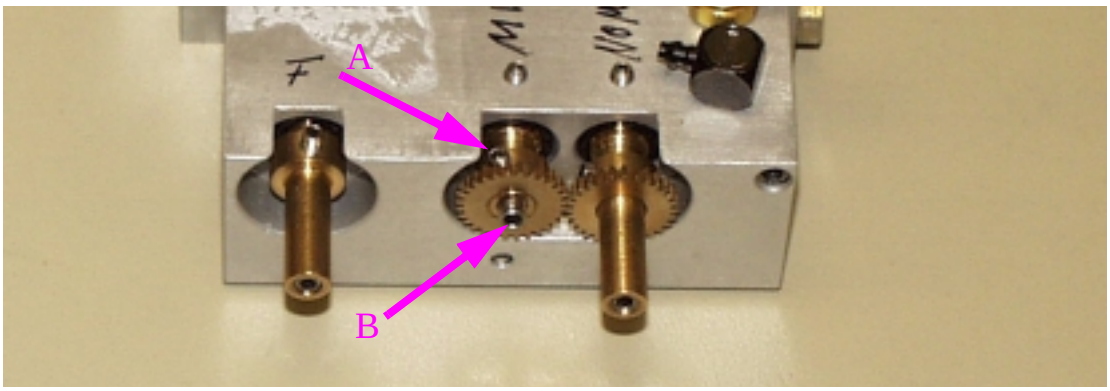

Fig. 22: Working block, Adjusting the “AIR Mix” minute volume

- Set the minute volume adjuster to the full left setting.
- Switch on the Oxylog 1000.
- Set the “AIR Mix/No AIR Mix” selector switch to “AIR Mix”.
- With the left-hand adjuster screw B (Fig. 22:) set a flow of 7.5 l/min (5 to 9 l/min).

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If the flow does not change, the cone may be stuck. Loosen it as necessary by tapping lightly on the working block with a hammer handle or a similar implement. If the cone cannot be freed, the working block must be replaced (see "3.8.4 Removing/replacing the working block").

- Set the minute volume adjuster to the full right setting.

The flow must be between 40 and 60 l/min (if it is not, make the settings and check them in alternating sequence).

Adjusting the minute volume control valves at "No AIR Mix" setting

- Loosen hexagon socket screw C.

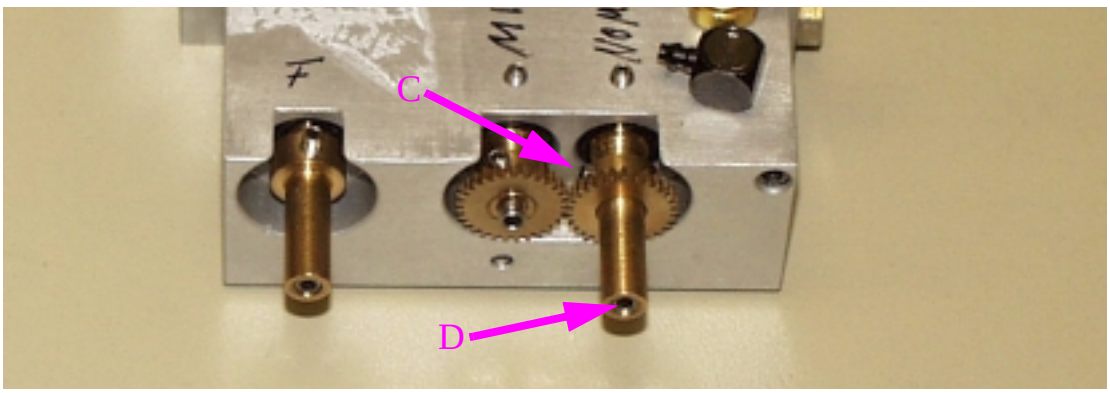

Fig. 23: Working block, Adjusting the "No AIR Mix" minute volume

- Set the minute volume adjuster to the full left setting.
- Switch on the Oxylog 1000.
- Set the AIR Mix/No AIR Mix selector switch to "No AIR Mix".
- With the right-hand adjuster screw D (Fig. 23:) set a flow of 7.5 l/min (5 to 9 l/min).
- Set the minute volume adjuster to the full right setting.

The flow must be between 40 and 60 l/min (if it is not, make the settings and check them in alternating sequence).

- Check the settings as per test certificate item "4.7 Minute volume (limit stop)", and repeat the adjustment if the tolerances are still exceeded.
- Tighten hexagon socket screws A and C (Fig. 22: and Fig. 23:).
- Deliver the unit to the operators ready for operation.

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3.8.4 Removing/replacing the working block

- Set the on/off switch of the Oxylog 1000 to “0“.
- Remove the drawer unit of the Oxylog 1000; see section “Opening the Oxylog 1000“.
- Detach the silicone hose from the pressure gauge connection.
- Loosen the screw (1) of the screw clamp and push the screw clamp over the pressure gauge into the interior of the Oxylog 1000.
- Press the pressure gauge outwards through the front panel.

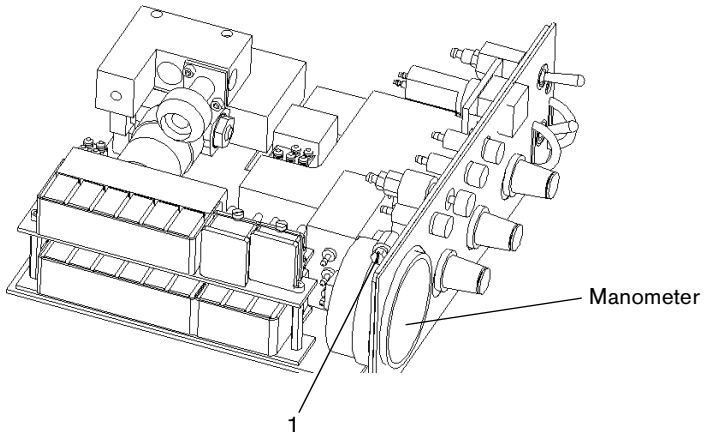

Fig. 24: View of the removed drawer unit, loosening the screw clamp

- Remove the caps from the control knobs.
- Loosen the nuts on the control knobs.
- Remove the control knobs from the axles.

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- Remove the nut (1).

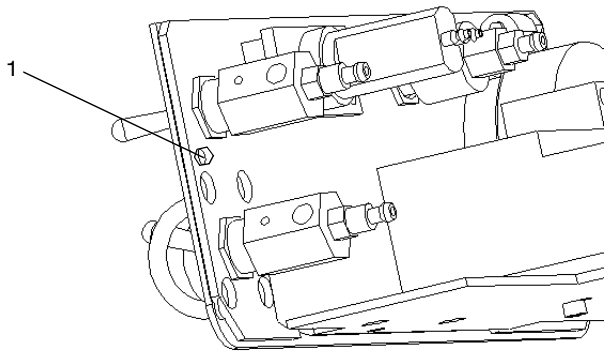

Fig. 25: View of the open Oxylog 1000, removing the nut

- Detach the front panel from the drawer unit of the Oxylog 1000.
- Remove the screws of the “Pv“ indicator.

Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the connections of the silicone hoses connected to the sockets of the indicators (Paw low and Paw high).
- Detach the silicone hoses leading to the Paw low and Paw high indicators.
- Unscrew the lock nuts of the Paw low and Paw high indicators from the indicators.
- Remove the Paw low and Paw high indicators towards the front.
- Remove the screws (2) and distance rollers.

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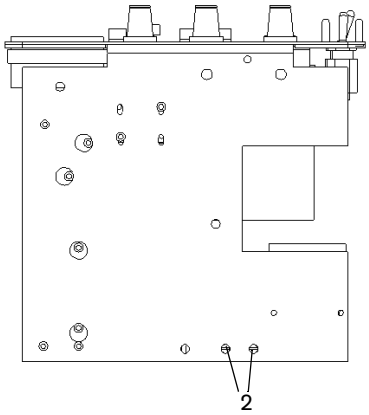

Fig. 26: Bottom view of the drawer unit, removing the screws

Interchanged silicone hoses. Interchanged silicone hoses in the Oxylog 1000 lead to malfunctions. Make a note of the hose connections before detaching them.

- Make a note of the silicone hose connections plugged into the hose connection socket of the working block.
- Detach the noted hoses from the working block.
- Remove the screws (1).

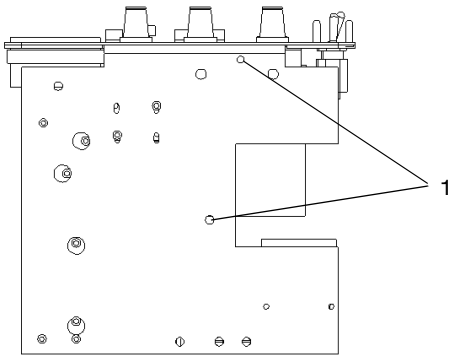

Fig. 27: Bottom view of the drawer unit of the Oxylog 1000, removing the screws

- Take the working block out of the drawer unit of the Oxylog 1000.
- Swap the hose connection sockets from the defective working block to the new ex-factory working block.

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- Insert the new working block in the drawer unit.
- Plug the noted hoses onto the hose connection sockets (Note: If necessary refer to the hose diagram of the Oxylog 1000 to connect up the silicone hoses!)
- Mount the working block in the drawer unit by the screws (1) (see diagram below).
- Mount the supply block with the corresponding screws and distance rollers.
- Mount the Pv indicator on the drawer unit (making sure that no silicone hoses are trapped!).
- Mount the Paw low and Paw high indicators in the drawer unit of the Oxylog 1000.
- Plug the noted silicone hoses onto the hose connection sockets of the Paw low and Paw high indicators.
- Mount the front panel on the drawer unit by the small screw and nut.
- Mount the pressure gauge in the drawer unit, moistening the rubber seal slightly to do so (Note: Make sure the pressure gauge is centered in the drawer unit!).
- Secure the pressure gauge against falling out of the drawer unit by means of the screw clamp.
- Fit the round cord ring in the rubber seal.
- Plug the silicone hose onto the hose connection socket of the pressure gauge.
- Follow the scale markings on the control knobs and secure the control knobs on the axles of the adjusting valves using the nuts.
- Press the caps of the control knobs onto the knobs, keeping to the scale markings.
- Install the drawer unit into the housing of the Oxylog 1000.

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3.9 Supply block

When making repairs, replace the supply block completely. Mount the pressure regulator, emergency air valve, hose connection socket and compressed gas inlet filter onto the new supply block.

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